



International Armaments Cooperation Programs





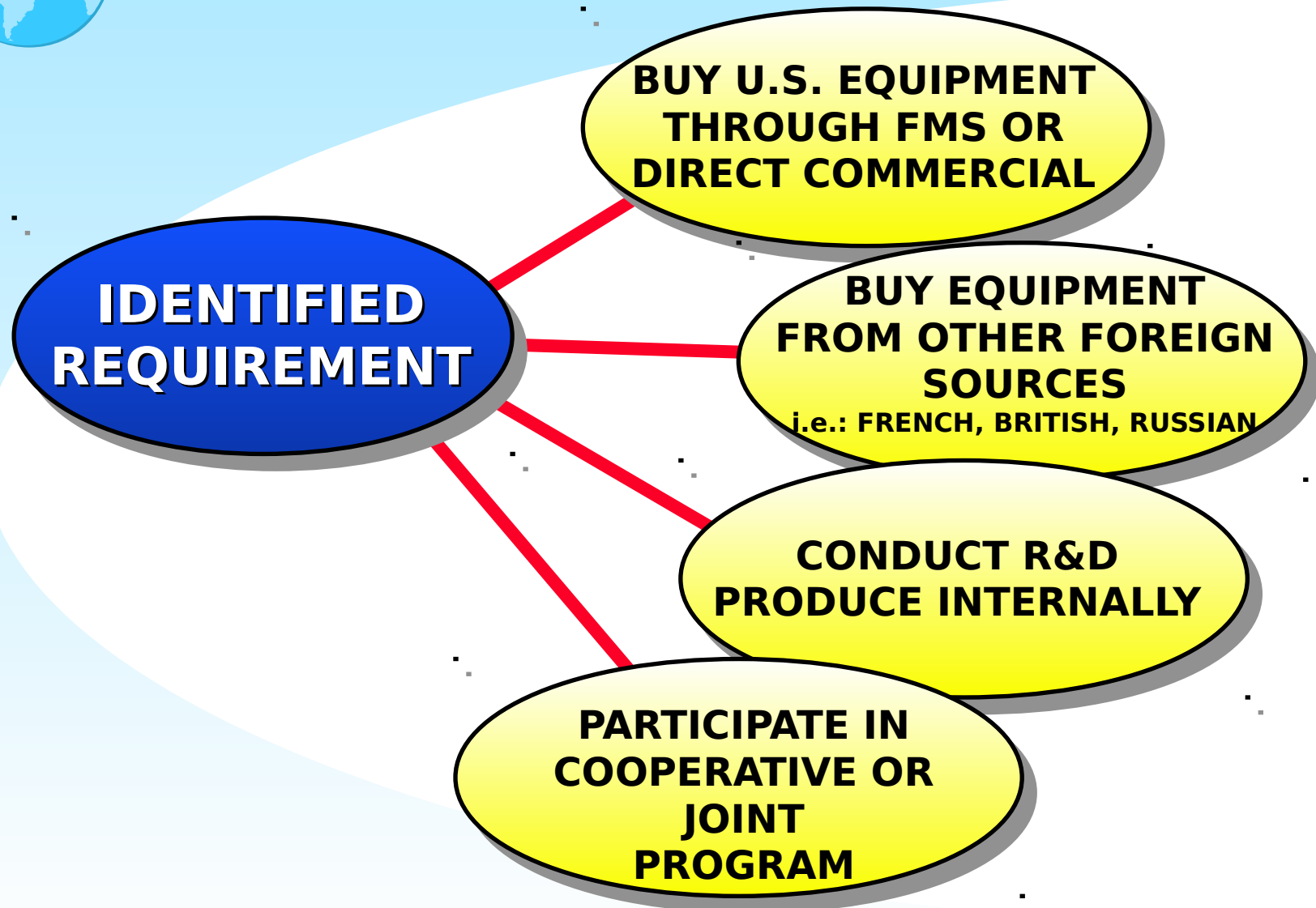
International Arms Cooperation Overview

- **Why Cooperation**
- **Scope of Legal Authority**
- **Programs**
 - **Defense Data Exchange Program**
 - **Engineer and Scientist Exchange Program**
 - **Foreign Comparative Test Program**
 - **Coproduction**
 - **Cooperative RDT&E & Production Programs**



Purchaser Decision Model

(ALLY / FRIEND / U.S.)





Defense Cooperation - Defined

- **Range of activity by DoD, its allies, and other friendly countries to promote international security**
- **Activities include, but are not limited to:**
 - **Armaments Cooperation**
 - **Cooperative R&D, or Co-production**
 - **Foreign Military Sales**
 - **Foreign Comparative Testing**
 - **Industrial Cooperation (R&D, co-production, commercial licensing)**
 - **Host Nation Support**
 - **Logistics Cooperation**
 - **Training**



International Defense Cooperation Motivation and Objectives

- **Political**
 - Strengthen political fabric of Alliance relationships
 - Use tech coop as incentive for arms export restraint
- **Operational**
 - Interoperable systems with allies & coalition partners
 - Broader military-to-military contract
 - Shared logistics and support on joint ops
- **Economic**
 - Share R&D cost on new systems
 - Reduce production costs through larger runs
 - Reduce support costs in foreign theaters through shared infrastructure & logistics
- **Technological**
 - Access and exploitation of the best global technologies



ENVIRONMENT

Cooperative Programs

Drivers

- **DODD 5000.1**
- **Budget reductions**
- **Downsizing**
- **Congress**
- **Operational Interoperability**
- **Technology Access**

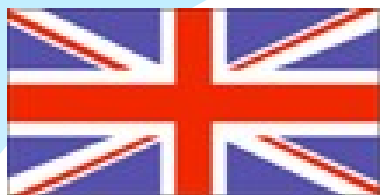
Impediments

- **Past Practices**
- **Contractors**
- **Congress**
- **Organizational mismatches**
- **“PPBS” funding mismatches**
- **Program complexity**
- **Technology security**
- **Not-invented-here**





Foreign Sources



M-1 ABRAMS Battle Tank



AV-8B Harrier





Interoperability

“...my concerns lie...with the future of all Alliance armaments cooperation endeavors. If we do not work together, I fear the growing technology gap between the United States and its NATO Allies will create an extremely divisive interoperability gap within the Alliance itself.”

**General Klaus Naumann (GEAR)
Chairman, NATO Military Committee
Address to US Congress and Senate, 23 June 97**



INTEROPERABILITY

Interoperability shall apply within and among United States forces and U.S. coalition partners. Mission-area-focused, integrated architectures shall be used to characterize these interrelationships.

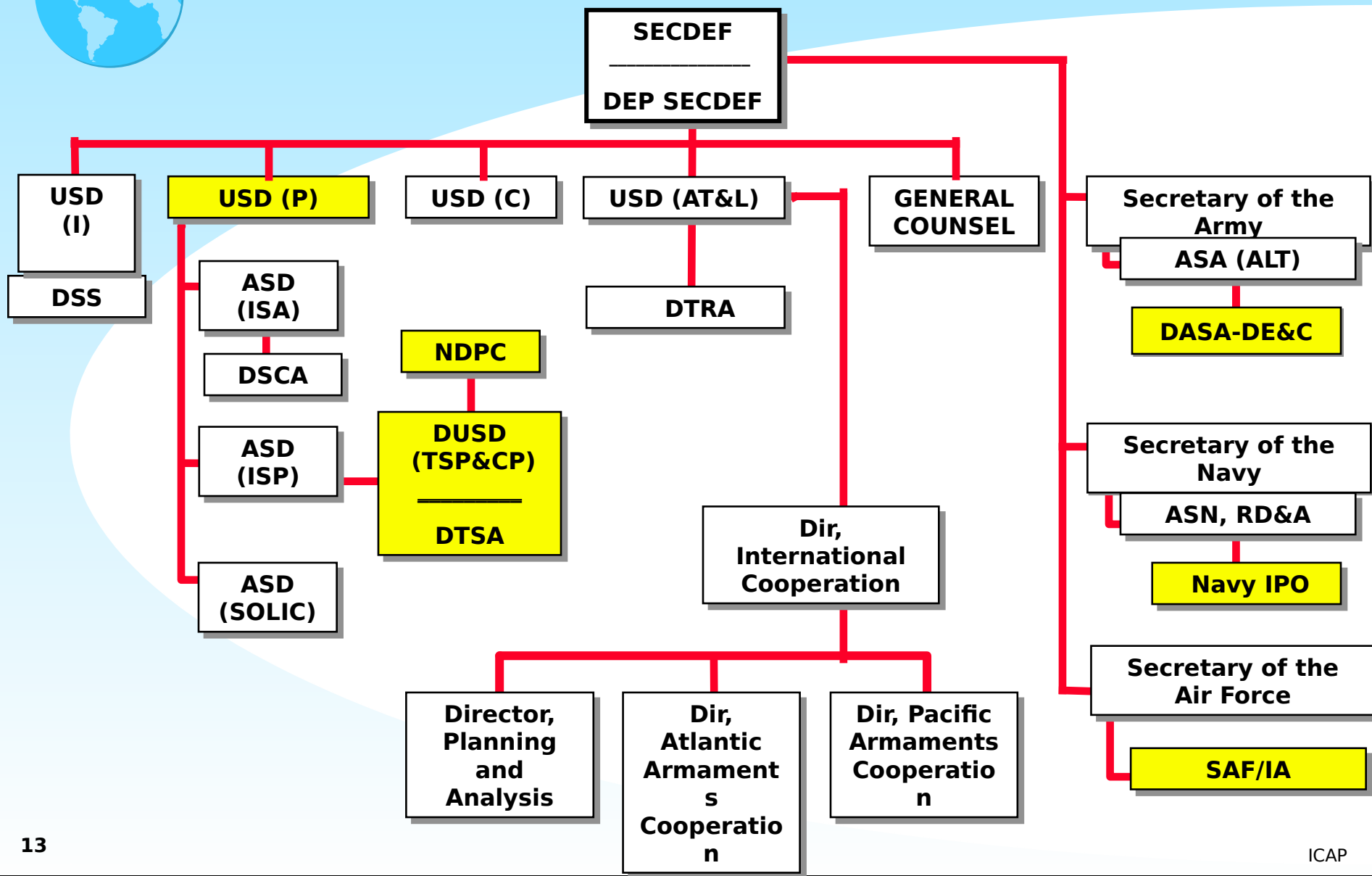
DepSecDef Memo, 30 Oct 02, Subj: Defense Acquisition

Para 3.7, Attachment 1

Coalition Warfare initiative supports international cooperative development of technological solutions that enable US and friendly armed forces to operate more effectively together across the full spectrum of multinational operations.



OSD and MILDEPs





Legal Authority International Cooperation

Title 10 U.S.C. §2358

- Conduct R&D
- Separate National Funding

SECDEF/Service Secy's
General Authority

Title 10 U.S.C. §2357

- Standardization & Interoperability
- Two-Way Street
- Waive "Buy American"

"Culver-Nunn" Amendment

Title 10 U.S.C. §2350a

- Cooperative R&D
- Equitable/Sharing Basis
- Two-Year Seed \$

"Nunn" Amendment

Title 22 U.S.C. § 2767 (= §27, AECA)

- Cooperative R&D
- Joint/Concurrent Production

• FMS Cost Waivers

• U.S. Buy

Title 10 U.S.C. § 2350b

from "Quayle" Amendment

Participants



IACP Programs



IACP PROGRAMS

- **Defense Data Exchange Agreements (DDEA)**
- **Engineer and Scientist Exchange Program (ESEP)**
- **Foreign Comparative Testing (FCT)**
- **Co-Production**
- **International Cooperative Research and Development**
- **Defense Trade**



DEFENSE DATA EXCHANGE PROGRAM (DDEP)



Objective

- **Provides for exchange of scientific and technical information in areas of mutual interest in order to:**
 - **Promote quality and interoperability**
 - **Avoid duplication of R&D**
 - **Enhance access to technological advances**
 - **Strengthen military alliances**
 - **Identify areas for further collaboration**
 - **Enhance DoD technical base**



Background

- **Initiated in the 1950's**
- **Master Data Exchange Agreement (MDEA) agreed at USD(AT&L) and foreign ministry level**
- **Data Exchange Annex (DEA) executed for each technical exchange by the services**



Requirements

- **Foreign R&D capabilities must contribute to satisfying a U.S. military requirement**
- **Exchanges limited to narrowest subject area practicable**
- **Conducted on a reciprocal, balanced basis**
- **Parties bear own costs**
- **No manufacturing or production data**
- **No loan/leases of equipment solely on basis of DEA**



DDEP Participants

Argentina

Australia

Austria

Belgium

Brazil

Canada

Czech Republic

(In process)

Denmark

Egypt

Finland (Interest)

France

Germany

Greece

Hungary

Indonesia (Inactive)

Israel

Italy

Japan

Jordan (Inactive)

Korea

Luxembourg (Inactive)

Malaysia

Netherlands

New Zealand

Norway

Pakistan

Philippines

Poland

Portugal (Inactive)

Singapore (Inactive)

Spain

Sweden

Switzerland

Taiwan

Thailand (Inactive)

Turkey

United Kingdom



Data Exchange Examples

- **Army - Australia - Modeling document exchange**
 - The U.S. leveraged \$75K with a \$5K investment under a DEA on *Electronic Warfare Vulnerability Assessment*. The documents sent to Australia cost \$5K to develop; the documents received from Australia would have cost the U.S. \$75K to develop
- **Air Force - Ramjet & Combined Engine Propulsion Technology**
 - DEA provides for sharing of research data from high speed, innovative propulsion studies. Cost and time avoidance of \$1M of RDT&E & 2-3 years
- **Navy - Netherlands - Surface Ships**
 - DEA provides for exchange of data on surface ship electromagnetic effects on the environment



Typical MOU Provisions

- **DEFINITIONS**
- **OBJECTIVES**
- **SCOPE OF WORK**
- **MANAGEMENT (ORGANIZATION & RESPONSIBILITY)**
- **FINANCIAL PROVISIONS**
- **CONTRACTING PROVISIONS**
- **WORK SHARING**
- **PROJECT EQUIPMENT**
- **DISCLOSURE & USE OF PROJECT INFORMATION**
- **CONTROLLED UNCLASSIFIED INFORMATION**
- **SECURITY**
- **VISIT PROCEDURES**
- **THIRD PARTY SALES & TRANSFERS**
- **LIABILITY & CLAIMS**
- **CUSTOMS DUTIES AND TAXES**
- **SETTLEMENT OF DISPUTES**
- **DURATION**



Engineer and Scientist Exchange Program (ESEP)



Background

- **First exchange program with Germany 1963**
- **MOU concluded at OSD level with foreign counterpart**
- **ODUSD(IP) designates a service to be DoD executive agent for administering program**
- **Promotes international cooperation in RDT&E by assignment of military or civilian engineers and scientists to positions in foreign facilities**



Policies

- **Assignments require in-depth study in technical areas associated with national defense**
- **Goal is near parity of exposure to each country's capabilities**
 - **Exchanges need not be one-for-one**
 - **Same technical discipline not required**
- **Not a training program**
- **Not a vehicle for obtaining tech data on weapon systems**



Engineer and Scientist Exchange Program (ESEP) MOUs

Exchange Agreements (Exec. Agent)

Australia - (USAF)

Brazil - (USAF)

Canada - (USA)

Egypt - (USA)

France - (USAF)

Germany - (USAF)

Greece - (USAF)

Israel - (USA)

Korea - (USA)

Netherlands - (USA)

Norway - (USAF)

Portugal - (USA)

Spain - (USA)

Sweden - (USA)

United Kingdom



ESEP EXAMPLES

- **Army - Australia - Next-generation combat net radio.**

U.S. engineer worked on the next-generation Combat Net Radio (CNR). Expertise gained from Australians will directly apply to CNR, to SINCGARS* program, to ABCA through enhanced communications capability during times of international conflict that require allies to deploy coalition forces.

- **Air Force - Germany - Prototype instruction computer program.**

German engineer at Armstrong Lab developed prototype module to use in automated instructional design computer program. High potential for civilian application.

- **Navy - France - Naval Architecture.**

U.S. and France exchanged engineers to work at their respective naval architecture/surface ship warfare centers.



Foreign Comparative Test (FCT) Program



FCT Program Authority, Policy and Purpose

- **Created 1989 - Reduce duplicative RDT&E**
- **Consolidated earlier programs:**
 - NATO comparative test (NCT) program (“Nunn” Amendment-1986) [“Side-by-Side”]
 - Foreign Weapons Evaluation (FWE) program (1980)
- **Funds U.S. test/evaluation of foreign equipment**
 - Does item show potential to satisfy U.S. service requirement?
 - Some tests done for comparison/assessment; not procurement
- **Supplement regular test & evaluation funding**



Service Responsibility/PM Involvement in FCT

- **Identify and nominate candidate foreign programs for FCT**
- **Develop the acquisition plan**
- **Develop the test plan**
- **Determine resources needed**
- **Execute the approved FCT proposal**
- **Provide quarterly status reports and completed test report to OSD**
- **Determine and execute procurement decisions**



FCT Successes

- **Pressure Sensitive Paint**
 - USAF in tested Russian aerodynamic models & paint technology in Russian wind tunnels
 - Cost & time avoidance of: RDT&E - \$3-4M, development time - 5-7 yrs & cost savings per test - \$500K-\$1M
- **Hot Gas Thrust Vector Control Valve**
 - USAF in tested French concept using rocket engine gases to adjust resultant thrust
 - Cost, time avoidance and payoff: RDT&E - \$10M, development time - 2 yrs
- **Cold Water Escape Suit w/integral life raft**
 - USN tested and bought from the UK for our Los Angeles Class Nuclear Attack Subs enabling crews to escape at greater depths and survive on the surface until rescued.
 - Cost avoidance: \$9 Mill.



'Fulcrum' (Soviet AF)

Paris Air Salon, Le Bourget Airport June 1989 (400mm f5.6 + 1/2 1/500 F100)



Benefits of FCT

- **Improved war-fighting capability**
- **Reduction in procurement costs through competition**
- **Avoidance of RDT&E costs**
- **International defense co-operation**
- **Enhanced U.S. industrial positions via teaming and overseas marketing opportunities**

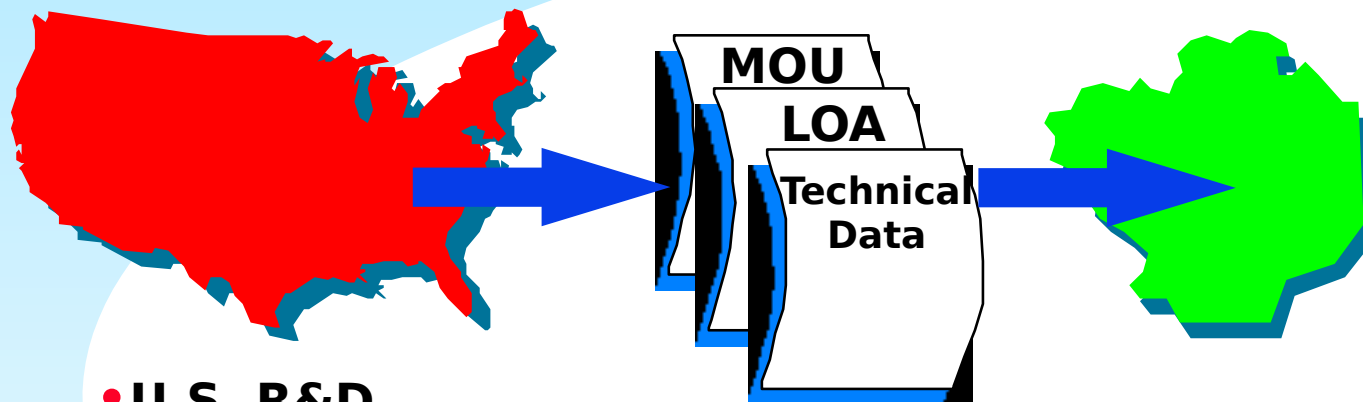


Co-production



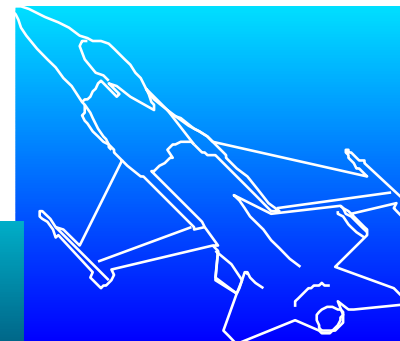
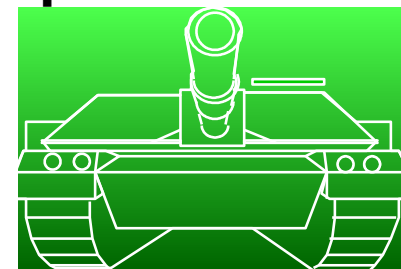
Co-production

Co-production



- U.S. R&D
- U.S. Initial Production
- FMS History

- Co-assemble
- Co-produce





Co-production Defined/Implemented

**Enables a foreign government or firm to acquire
“know-how” to manufacture, assemble,
repair,
maintain operate a defense item (in whole
or part),
by either:**

- **Government-to-Government arrangement:**

- **LOA or LOA and MOU**

or

- **Commercial License:**

- **Munitions export license**



Typical Co-production Phases

I. Training

II. Facilities Set Up

III. Final Tests and Checks

IV. Co-assembly

V. Co-production



Objectives

Support co-production that benefits U.S. by:

- **Encouraging allied and friendly nation acquisition of U.S. equipment as cost-effective solution for military**
- **Improving interoperability**
- **Fostering foreign military and industrial capabilities with U.S. defense needs**
- **Broadening logistics base for mutual support**



Co-production - Pros/Cons

Pros

- Allows selection of proven system
- Avoids duplication in research and development
- Enhances equipment standardization
- Effective

Cons

- May entail duplication in production
- Lose some economies of scale e.g. higher cost per unit if no other factory use - M1A1 tank in Egypt
- less efficient than simple procurement

- Trades-off defense for increased socio-economic return, e.g. offsets - depends on viewpoint



Negotiation and Conclusion Authority

- **International agreements contemplating co-production implemented via security assistance program require approval of the Director, DSCA**
- **Guidance on co-production MOUs and LOAs set out in SAMM, C11.9.3, and DoDD 5530.3, *Coproduction Agreements*.**

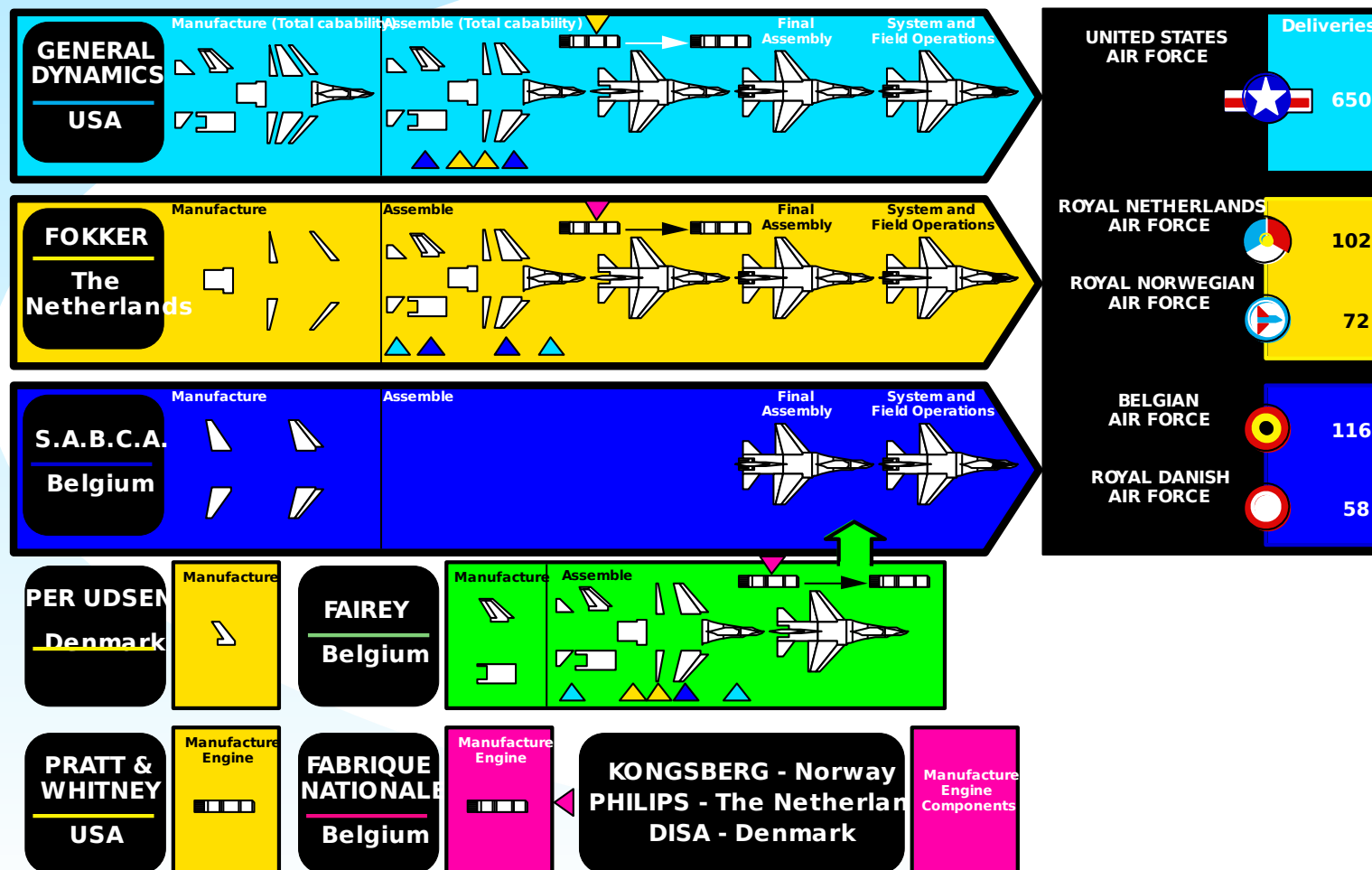


Sample Co-production Programs

- **EP-3 AIRCRAFT (+ 14 other licensed systems)**
 - JAPAN
- **AIM-9L MISSILE**
 - GERMANY
 - JAPAN
- **M1A1 TANK**
 - EGYPT
- **STINGER AIR DEFENSE MISSILE**
 - GERMANY
 - SWITZERLAND
- **F-16 MULTINATIONAL FIGHTER PROGRAM**
 - BELGIUM, DENMARK, NETHERLANDS, NORWAY
 - TURKEY - \$7.4B for 240 (232 of which to be built in Turkey) - to year 2000
- **NATO AWACS**
 - NATO COUNTRIES LESS FRANCE, ICELAND, SPAIN



F-16 Multinational Co-production



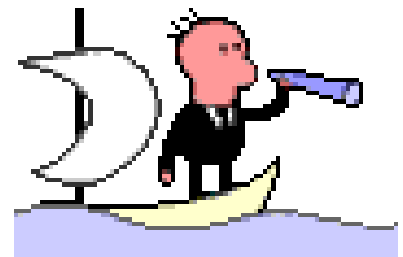


***Cooperative
Research
Development Test
& Evaluation
(RDT&E)
and Production***



System Acquisition Hierarchy of Alternatives

1. **Commercially** available products from domestic or **international sources**, or the development of dual-use technologies;
2. Additional production/modification of previously-developed U.S. or **Allied military systems or equipment**;
3. **Cooperative development program with one or more Allied nations**;
4. New joint Service development; or
5. New Service-unique development.



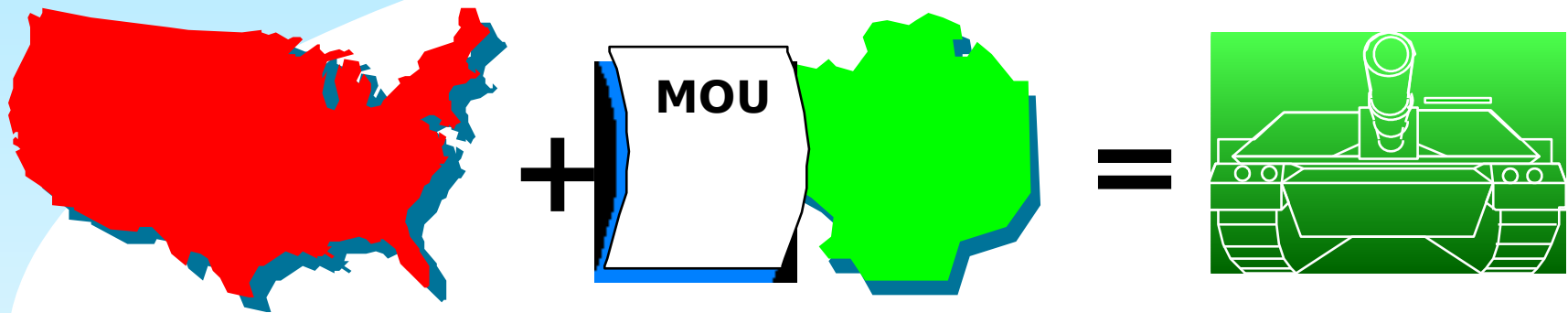


Cooperative RDT&E and Production Definition

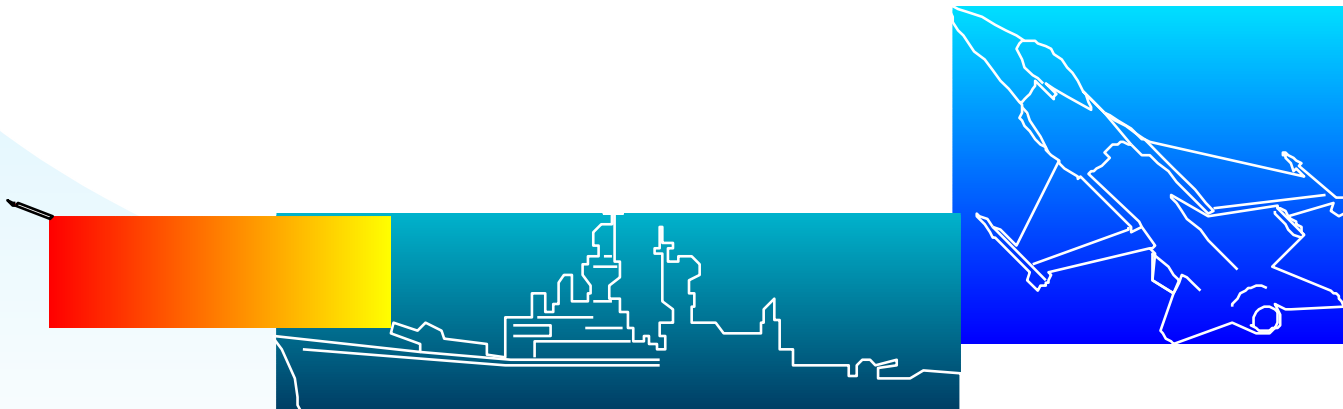
The DOD and a foreign defense ministry by written agreement jointly manage an RDT&E and/or production effort to satisfy a common requirement by sharing work, technology and costs



Cooperative Development and Production



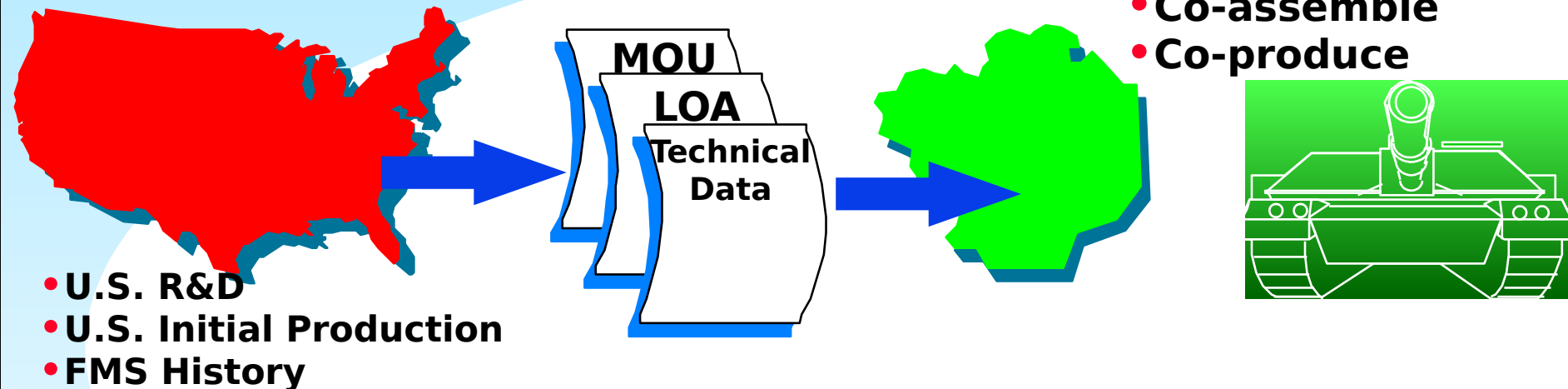
- Joint R&D
- Joint/Concurrent Production



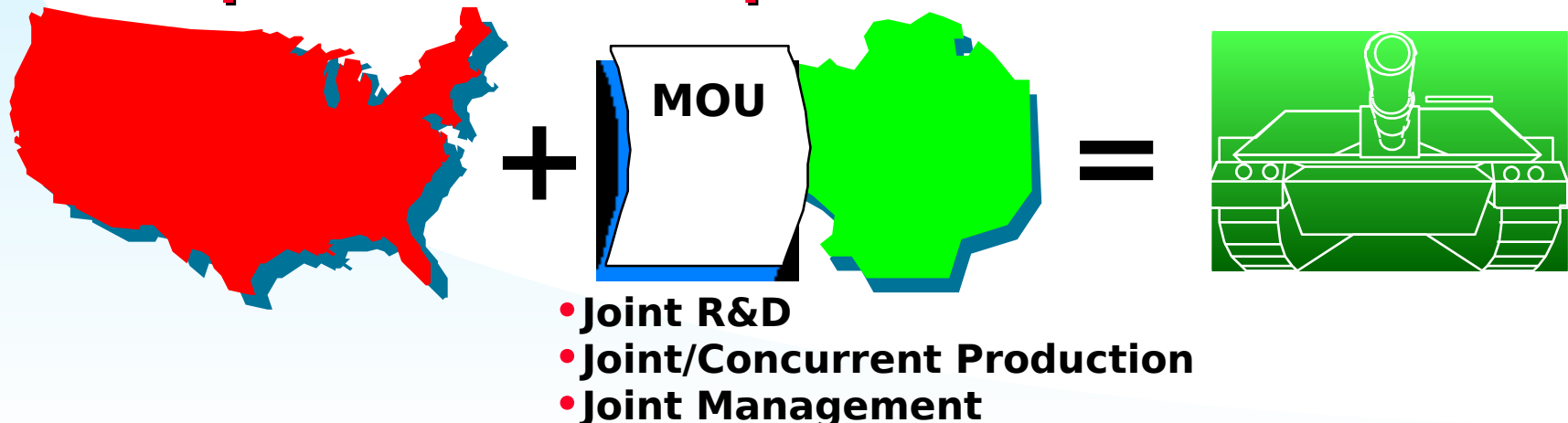


Co-production vs. Cooperative Development and Production

Co-production



Cooperative Development and Production





SAMPLE COOPERATIVE R&D PROGRAMS

- **NATO SEASPARROW MISSILES**
 - **1966: Denmark, Italy, Norway, U.S.**
- **Thales France coop with Raytheon on Seapar Radar (mini-APAR)**
 - **Suffering from: releasability, in-fighting, laws/regs protecting tech, proprietary rights...**
- **Joint Strike Fighter: Possibly 10 countries joined or joining this party**

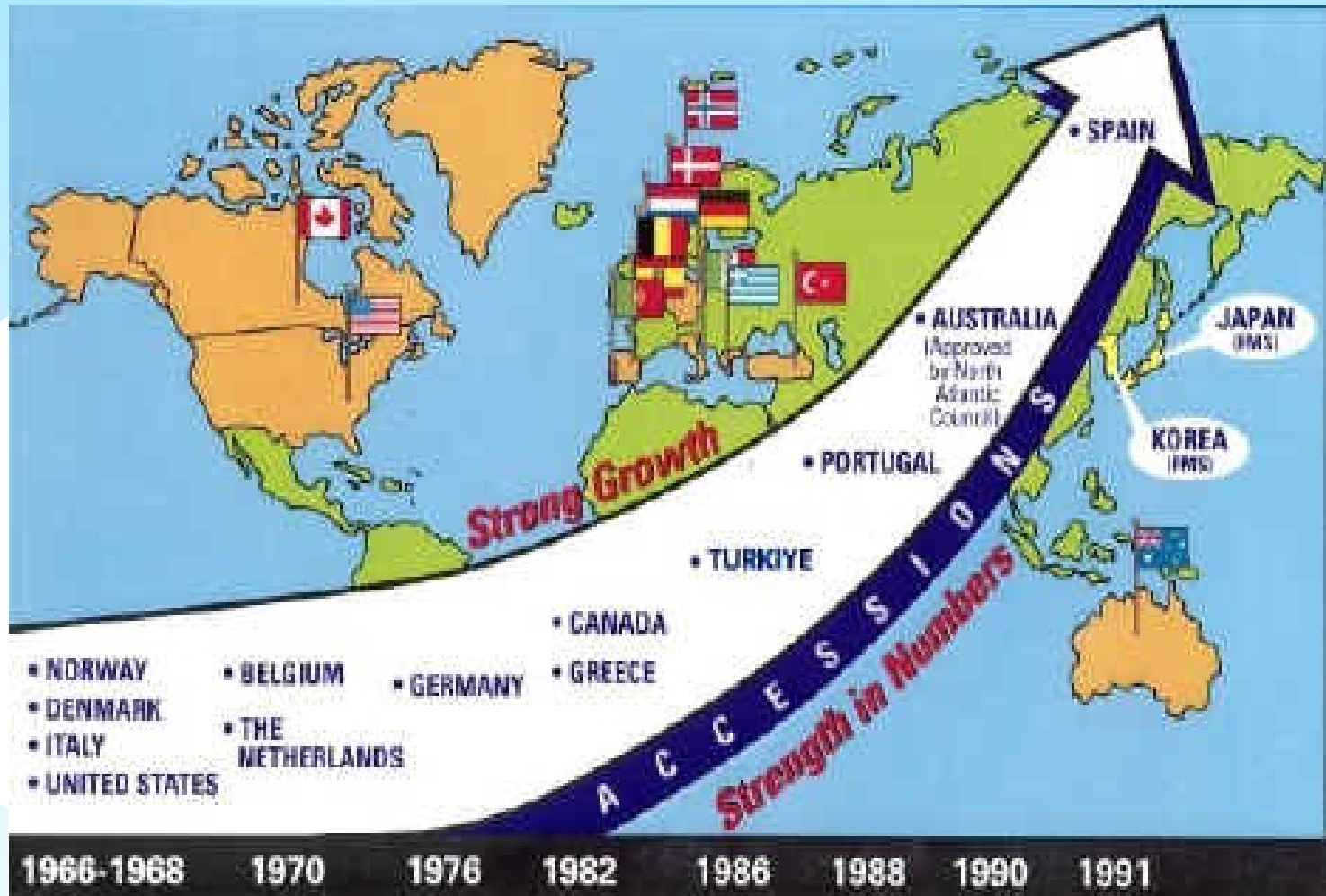


Cooperative Programs:

- **Guided Multiple Launch Rocket System: GE, FR, IT, UK**
- **Multifunction Information Distribution System (NATO)**
- **Patriot Air Defense Systems: GE**
- **Rolling Airframe Missile: GE**
- **AWACS Upgrade: FR**

“What are the consequences of Iraq War?”

SEASPARROW MISSILE



The cartoon illustrates the challenges of international climate agreements. Nations, shown as figures carrying their respective flags, are climbing a steep, rocky mountain. The path is fraught with obstacles, each labeled with a key issue in global environmental policy: COMMITMENT, COOPERATION, TECHNOLOGY TRANSFER, ENVIRONMENTAL UNCERTAINTIES, CULTURAL DIFFERENCES, NATIONAL INTERESTS, LIMITED RESOURCES, and DIVERSE SOLUTIONS. At the summit, a sign reads "MEMBERS ONLY PAST THIS POINT," suggesting exclusivity or a final destination. Other signs like "GIVE UP LEAP," "BRIDGE OUT," "DETOUR," "LOOSE ROCK," "GO BACK," "KEEP OUT," "NAAGS WAS HERE," and "COMPROMISE" further emphasize the difficulties and potential setbacks. On the right, a resort-like area with a waterfall, swimming pool, and lounge chairs provides a stark contrast to the arduous climb. The sun is depicted with a happy face, while lightning bolts flash in the background, symbolizing both hope and the volatile nature of the process.



MEADS—GE/IT/US



JOINT STRIKE FIGHTER





JSF Advantages

- **Affordability: Reduce Development and Production Costs as well as cost of ownership**
- **Partnerships:**
 - **Collaborative Development Partner-UK**
 - **Associate/Limited Partner-DE,NO,NE**
 - **Informed Partner-Canada and Italy**
 - **Major Participant-FMS Customer**
 - **Security Cooperation Participant--Israel**



Joint Strike Fighter Cooperative Production

Level Country Year joined
SDD\$

I	<u>UK</u>	<u>2001</u>	<u>\$2 Bill</u>
II	Italy	2002	\$1 Bill
	<u>Neth</u>	<u>2002</u>	<u>\$800Mill</u>
III	Turkey	2002	\$175Mill
	Canada	2002	\$150Mill
	Denmark	2002	\$150Mill
	Australia	2003	\$150Mill
	Norway	2002	\$125Mill
	Singapore	-----	\$50Mill

* Israel 2003 \$150Mill

(*Security Cooperation Participant Only)



Joint Ventures.... Wave of the Future???

- **Bell Helicopters and Agusta SpA, Cascina Costa, Italy: S/R, Utility Helicopters**
- **Thales France and Raytheon: Radar Systems**
- **Lockheed Martin and Intersputnik (Russia): Satellite Network Telecomm**
- **Northrup Grumman and EADS, France: Airframes**
- **General Dynamics and Santa Barbara Ind., Spain: armored vehicles**



NATO International Cooperation Opportunity Group (ICOG)

- **August 2002**
- **GE, IT, US, UK, FR**
- **8 Areas of Defense**
 - **UAV—France**
 - **Def of CBW-US/GE**
 - **Combat ID-US**
 - **MCM-UK**
 - **Air Refuel Tech-FR**
 - **Interop Tac Com-US**
 - **Training/Ex-Italy**
 - **Nav Litt Warfare-GE**
- **New Ship Designs**
 - **Modular sensors/weapons etc..**
- **NATO'S Rapid Reaction Force**
 - **Interoperability Key component of High Intensity Warfare**



Defense Trade



Defense Trade





Buy American Act of 1933 (41 USC 10)

What defines a product as Domestic or Foreign?

- **Domestic end product:**
 - **Mined or produced in U.S.**
 - **Over half of the component cost originates in U.S. or qualifying country**
- **Foreign end product:**
 - **Fails above requirements**
 - **50% evaluation factor added to offer**
- **Certain products given special protection (e.g. construction materials)**



Buy American Act of 1933 (41 USC 10)

- Act does **not** apply in certain cases:
 - Unreasonable Cost
 - Inconsistent with the public interest
 - Would be for services



Defense Trade

- **10-TON TRUCK**
 - **MASCHINENFABRIX AUGSBERG-NUERNBERG (MAN), FRG**
- **9MM PISTOL**
 - **BERETTA, ITALY**
- **T-45 TRAINING SYSTEM (T45TS)**
 - **GOSHAWK AIRCRAFT, SIMULATORS, COMPUTER-AIDED DEVICES, BRITISH AEROSPACE**
- **MOBILE SUBSCRIBER EQUIPMENT (MSE)**
 - **RITA SYSTEM, FRANCE**



International Defense Cooperative Activities

- **Data exchange agreements:> 700 with 32 countries**
- **Engineer and scientist exchange: > 100 people with 14 countries**
- **Coop R&D programs:> 220 with 18 countries**
- **Co-production programs: 50 with 19 countries**
- **Armaments coop MOUs: 24 countries**
- **Acquisition and cross-servicing agreements: 28 countries**
- **Logistics support MOUs: 11 countries**
- **Bilateral meetings every 12-24 months with 24 countries**



Key Points to Remember

- **Cooperative programs enhance preparedness**
- **Programs are mutually beneficial**
- **Planners avoid duplication of effort and focus on common/interoperable equipment**



International Arms Cooperation Summary

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- Programs
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 - Coproduction
 - Cooperative RDT&E & Production Programs
 - Defense Trade